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Ellismarsporium gen. nov. and *Stanhughesiella* gen. nov. to accommodate atypical *Helminthosporium* and *Corynesporella* species

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Abstract—Two new genera are proposed: *Ellismarsporium* for species of *Helminthosporium* and *Corynesporella* that have catenate conidia and polytretic conidiogenous cells, and *Stanhughesiella* for a species of *Helminthosporium* with dictyoseptate conidia. Descriptions and illustrations are provided.

Key words—asexual ascomycota, hyphomycetes, taxonomy, tropical fungi

Introduction

Helminthosporium Link, typified by *H. velutinum* Link, is characterized by macronematous, unbranched, erect conidiophores. The conidiogenous

cells are polytretic, integrated, terminal and intercalary, determinate, with the conidiogenous loci at the apex and laterally below the septa. The conidia are solitary, obclavate to cylindrical-obclavate, distoseptate, sometimes rostrate, smooth, subhyaline to olivaceous brown, usually with an evident dark brown or brown basal scar.

Helminthosporium dictyoseptatum produces dictyoseptate conidia in polytretic conidiogenous cells (Hughes 1980). For this species, clearly separated from the *Helminthosporium* generic concept, we propose the new genus, *Stanhughesiella*.

Several other species with the same conidial ontogeny but producing blastocatenate conidia have been included in *Helminthosporium* (Bhat & Sutton 1985, Castañeda-Ruiz & Kendrick 1991, Ellis 1961, Matsushima 1975, Sutton 1993), requiring an expanded generic concept. A similar situation is found in *Corynesporella* Munjal & H.S. Gill [typified by *C. urticae* Munjal & H.S. Gill (Munjal & Gill, 1961)], which is diagnosed by macronematous conidiophores and monotretic, terminal or discrete conidiogenous cells that produce solitary or short catenate, distoseptate, subhyaline or pale brown conidia. In contrast, *Corynesporella pinarensis* and *C. simpliphora* are characterized by unbranched conidiophores and polytretic, integrated, intercalary and terminal conidiogenous cells that produce catenate distoseptate conidia (Castañeda-Ruiz 1985, Matsushima 1993)—characters that deviate from the *Corynesporella* generic concept. Consequently, we propose the new genus *Ellismarsporium* to accommodate these atypical *Helminthosporium* and *Corynesporella* species.

Taxonomy

Ellismarsporium R.F. Castañeda & X.G. Zhang, **gen. nov.**

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Differs from *Helminthosporium* by its acropetal, unbranched or branched chains of conidia and from *Corynesporella* by unbranched conidiophores and polytretic conidiogenous cells.

Type species: *Helminthosporium hypselodelphyos* M.B. Ellis [≡ *Ellismarsporium hypselodelphyos* (M.B. Ellis) R.F. Castañeda & X.G. Zhang]

Etymology: Latin, *Ellismar-sporium*, named in honor to Martin Beazor Ellis, (United Kingdom) for his contribution to the study of hyphomycetes + *-sporium*, referring to the conidia.

Colonies effuse, hairy, dark. Mycelium mostly immersed. Conidiophores distinct, single, unbranched, straight or flexuous, cylindrical or subulate, mid to very dark brown, smooth or verruculose. Conidiogenous cells polytretic, integrated, terminal and intercalary, determinate, cylindrical. Conidiogenous

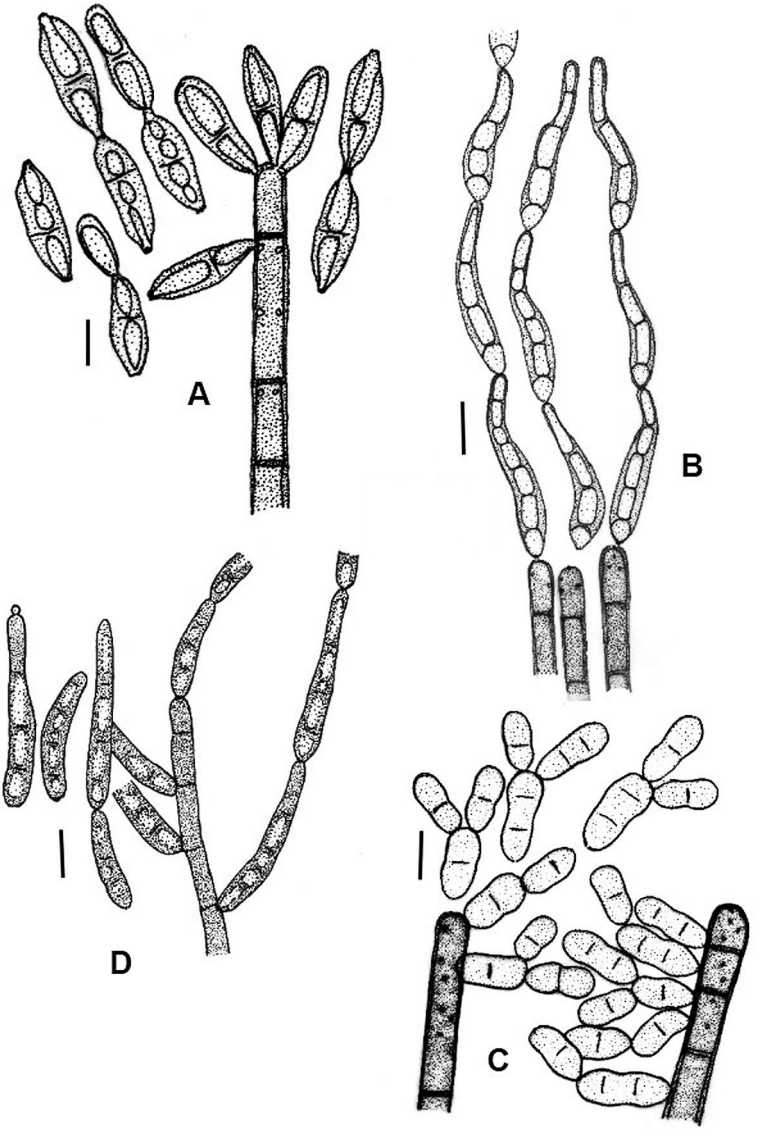

Fig. 1. *Ellismarsporium* species: conidiogenous cells and conidia. A. *E. hypselodelphyos* (Ellis 1961); B. *E. catenatum* (Matsushima 1975); C. *E. parvum* (Castañeda-Ruiz & Kendrick 1991); D. *E. pinarense* (Castañeda-Ruiz 1985). Scale bars: A, C, D = 10 μm; B = 20 μm. Redrawn by R.F. Castañeda-Ruíz.

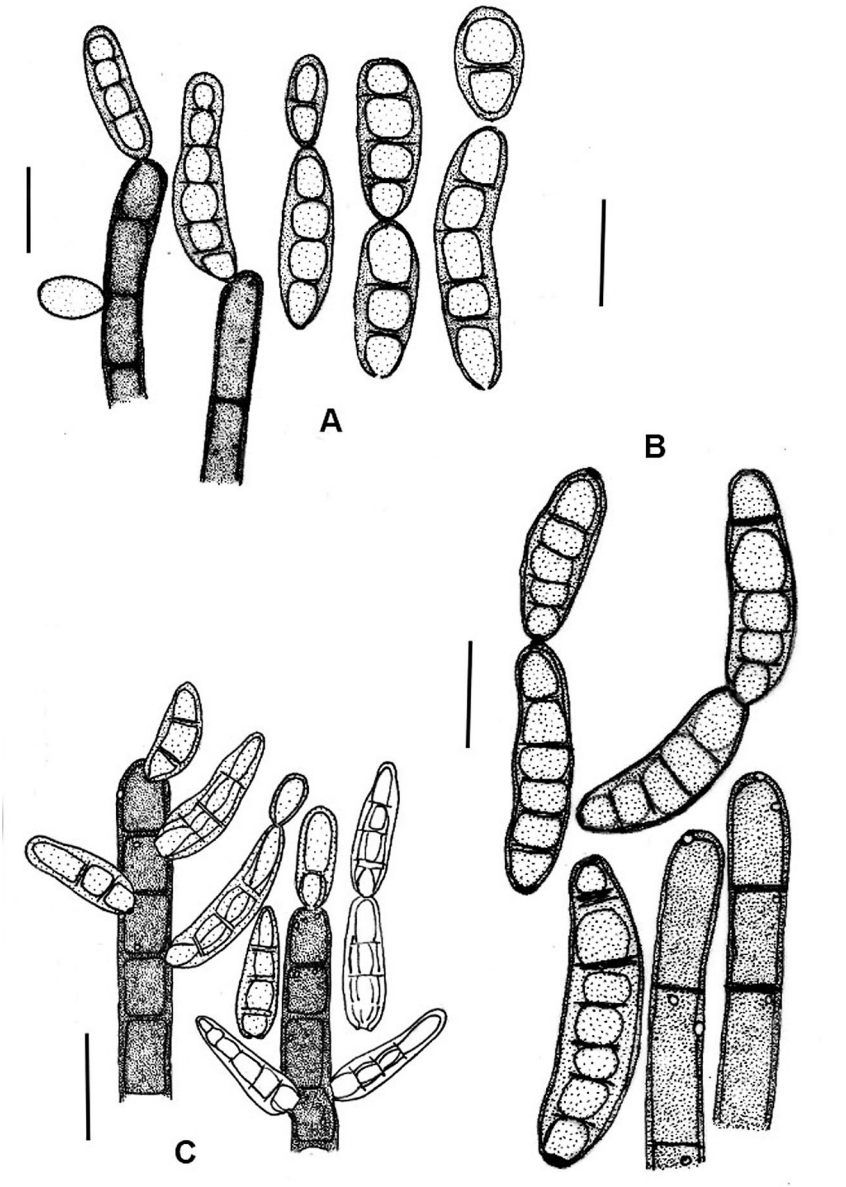

Fig. 2. *Ellismarsporium* species: conidiogenous cells and conidia. A. *E. senseletii* (Bhat & Sutton 1985); B. *E. simpliphorum* (Matsushima 1993); C. *E. zombaense* (Sutton 1993). Scale bars: A, B = 10 µm; C = 20 µm. Redrawn by R.F. Castañeda-Ruíz.

LOCI pores near septa. CONIDIA blastocatenulate, acropleurogenous, obclavate, cylindrical, ellipsoid to oblong, distoseptate, pale brown to brown, smooth or verruculose, sometimes with a dark brown or black scar at the ends.

Ellismarsporium hypselodelphyos (M.B. Ellis) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 1A

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≡ *Helminthosporium hypselodelphyos* M.B. Ellis, Mycol. Pap. 82: 18 (1961).

Ellismarsporium catenatum (Matsush.) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 1B

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≡ *Helminthosporium catenatum* Matsush., Icon. Microfung. Matsush. Lect.: 83 (1975).

Ellismarsporium parvum R.F. Castañeda & W.B. Kendr., **nom. nov.** FIG. 1C

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≡ *Helminthosporium parvum* R.F. Castañeda & W.B. Kendr., Univ. Waterloo Biol. Ser. 35: 57 (1991), nom. illeg. (non Grove 1886).

Ellismarsporium pinarense (R.F. Castañeda) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 1D

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≡ *Corynesporella pinarensis* R.F. Castañeda, Deuteromyc. Cuba, Hyphomyc. 3: 12 (1985).

Ellismarsporium senseletii (Bhat & B. Sutton) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 2A

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≡ *Helminthosporium senseletii* Bhat & B. Sutton, Trans. Brit. Mycol. Soc. 85: 119 (1985).

Ellismarsporium simpliphorum (Matsush.) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 2B

MYCOBANK MB 807609

≡ *Corynesporella simpliphora* Matsush., Matsush. Mycol. Mem. 7: 47 (1993).

Ellismarsporium zombaense (B. Sutton) R.F. Castañeda & X.G. Zhang, **comb. nov.** FIG. 2C

MYCOBANK MB 807610

≡ *Helminthosporium zombaense* B. Sutton, Mycol. Pap. 167: 32 (1993).

Key to *Ellismarsporium* species

1. Conidia not more than 3-distoseptate 2
1. Conidia more than 3-distoseptate 3
2. Conidia 1–2-distoseptate, cylindrical-ellipsoidal to oblong, slightly constricted at the middle, smooth, brown, 12–27 × 7–12 µm ..... *E. parvum*
2. Conidia 1–3-distoseptate, fusiform, clavate or oblong, smooth, pale olivaceous brown, 15–28 × 6.5–8 µm ..... *E. hypselodelphyos*

3. Conidia not more than 6-distoseptate 4
3. Conidia more than 6-distoseptate 6
4. Conidia 1–5-distoseptate, obclavate, smooth, brown to olivaceous brown, 25–75 × 3.5–7 µm . . . . . *E. pinarense*
4. Conidia not as above 5
5. Conidia 0–6-distoseptate, cylindrical to fusiform to obclavate, slightly constricted at the septa, smooth, mid brown, curved, 10–33 × 7.5 µm . . . . . *E. senseletii*
5. Conidia 2–6-distoseptate, obclavate, curved, smooth, pale olivaceous, 15–80 × 6–8.5 µm . . . . . *E. catenatum*
6. Conidia 1–7-distoseptate, obclavate to cylindrical, or long oblong, curved, pale olivaceous, with brown scar at the ends, 18–62 × 6.5–10 µm . . . . . *E. simpliphorum*
6. Conidia 3–5(–10)-distoseptate, obclavate, smooth, subhyaline, with a dark brown basal scar, 26–50(–74) × 7.5–9.5 µm . . . . . *E. zombaense*

Comments: *Helminthosporium velutinum*, *H. dalbergiae*, and *H. magnisporum* were found phylogenetically associated with the family *Massarinaceae* by Tanaka et al. (2015), but no molecular data were found on the seven proposed *Ellismarsporium* species; further molecular study is necessary in order to establish their phylogeny.

Stanhughesiella R.F. Castañeda & D.W. Li, **gen. nov.**

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Differs from *Helminthosporium* by its dictyoseptate conidia.

Type species: *Helminthosporium dictyoseptatum* S. Hughes [≡ *Stanhughesiella dictyoseptata* (S. Hughes) R.F. Castañeda & D.W. Li]

Etymology: Latin, *Stanhughesiella*, described in honor to Stanley J. Hughes (Canada) for his contribution to the studies of the hyphomycetes.

Colonies effuse, hairy, dark. Mycelium mostly immersed. Conidiophores distinct, single, unbranched, straight or flexuous, septate, cylindrical or clavate, mid to very dark brown, smooth or verruculose. Conidiogenous cells polytretic, integrated, terminal and intercalary, determinate. Conidia solitary, acropleurogenous, simple, obclavate, cylindrical to ellipsoid, dictyoseptate, pale brown to dark brown, smooth, sometimes with a dark brown or black scar at the base.

Stanhughesiella dictyoseptata (S. Hughes) R.F. Castañeda & D.W. Li, **comb. nov.** Fig. 3

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≡ *Helminthosporium dictyoseptatum* S. Hughes, New Zealand J. Bot. 18: 69 (1980).

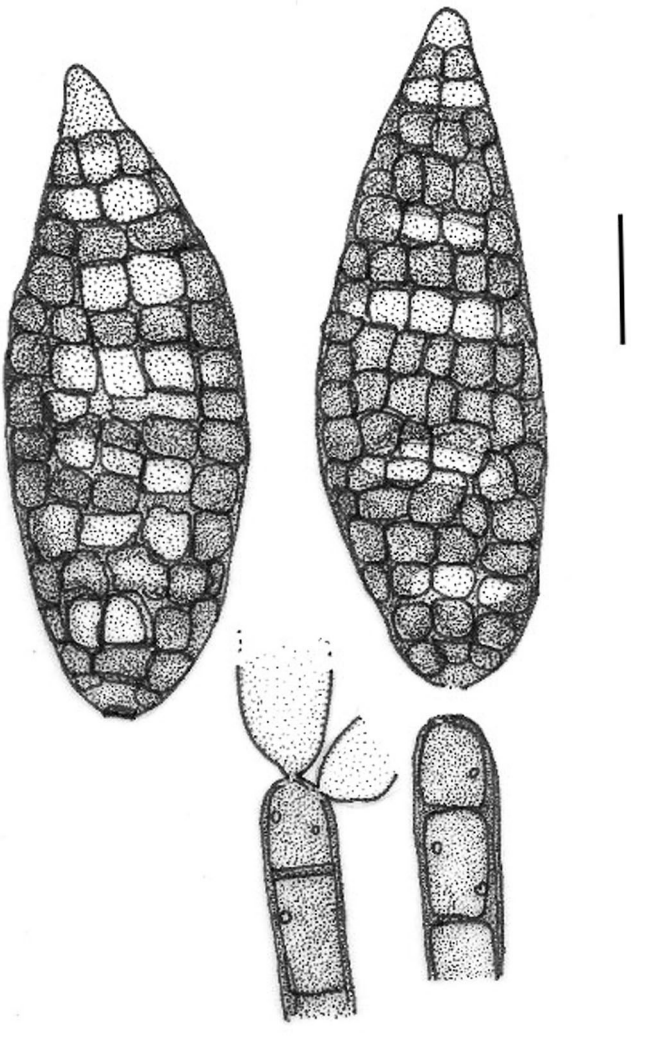

Fig. 3. *Stanhughesiella dictyoseptata*: conidiogenous cells and conidia (Hughes 1980). Scale bar = 10 µm. Redrawn by R.F. Castañeda-Ruíz.

Comments: *Briansuttonia* R.F. Castañeda et al., *Embellisia* E.G. Simmons, *Gibbago* E.G. Simmons, and *Ulocladium* Preuss (Seifert et al. 2011) are superficially similar to *Stanhughesiella*, but those four genera have

cicatrized conidiogenous loci and some produce conidia in acropetal chains. *Stanhughesiella* also resembles *Stemphylium* Wallr. (Seifert et al. 2011), which is distinguished by monoblastic conidiogenous cells with a distinct cupulate cicatrized scar that develops after several enteroblastic percurrent regenerations.

Acknowledgments

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